

### **Amendments to the Claims**

This listing of claims will replace all prior versions and listings of claims in the application:

#### Listing of claims:

1. (currently amended) A method of generating a key  $k$  for use in a cryptographic function performed over a group of order  $q$ , said method including the steps of:
  - generating a seed value  $SV$  from a random number generator;
  - performing a hash function  $H()$  on said seed value  $SV$  to provide an output  $H(SV)$ ;
  - determining whether said output  $H(SV)$  is less than said order  $q$  prior to reducing mod  $q$ ;
  - accepting said output  $H(SV)$  for use as said key  $k$  if the value of said output  $H(SV)$  is less than said order  $q$ ;
  - rejecting said output  $H(SV)$  as said key if said value is not less than said order  $q$ ;
  - if said output  $H(SV)$  is rejected, repeating said method; and
  - if said output  $H(SV)$  is accepted, providing said key  $k$  for use in performing said cryptographic function, wherein said key  $k$  is equal to said output  $H(SV)$ .
2. (original) The method of claim 1 wherein another seed value is generated by said random number generator if said output is rejected.
3. (original) The method of claim 1 wherein the step of accepting said output as a key includes a further step of storing said key.
4. (original) The method of claim 1 wherein said key is used for generation of a public key.
5. (previously presented) The method of claim 1 wherein said order  $q$  is a prime number represented by a bit string of predetermined length  $L$ .
6. (previously presented) The method of claim 5 wherein said output from said hash function is a bit string of predetermined length  $L$ .
7. (original) The method of claim 1 wherein if said output is rejected, said output is incremented by a deterministic function and a hash function is performed on said incremented output to

produce a new output; a determination being made as to whether said new output is acceptable as a key.

8. (original) The method of claim 7, wherein said step of incrementing includes a further step of adding a particular value to said seed value.

9. (currently amended) A method of generating a key  $k$  for use in a cryptographic function performed over a group of order  $q$ , said method including the steps of:

generating a seed value  $SV$  from a random number generator;

performing a hash function  $H()$  on said seed number  $SV$  to provide a first output  $H(SV)$ ;

incrementing said seed value  $SV$  by a predetermined function  $f()$  and performing said

hash function  $H()$  on said incremented seed value to provide a second output

$H(f(SV))$ ;

combining said first output  $H(SV)$  and second output  $H(f(SV))$  to produce a new output;

determining whether said new output has a value less than said order  $q$  prior to reducing mod  $q$ ;

accepting said new output for use as said key  $k$  if said new output has a value less than said order  $q$ ;

rejecting said new output as said key  $k$  if said value is not less than said order  $q$ ;

if said new output is rejected, repeating said method, and

if said new output is accepted, providing said key  $k$  for use in performing said cryptographic function, wherein said key  $k$  is equal to said new output.

10. (original) The method of claim 9 wherein upon rejection of said new output a new seed value is generated by said random number generator.

11. (original) The method of claim 9 wherein upon rejection of said new output said seed value is incremented by a predetermined function and revised values for said first output and said second output are obtained.

12. (previously presented) The method of claim 9 wherein a bit string greater than a predetermined length  $L$  is obtained and an  $L$  bit string selected therefrom for comparison with said order  $q$ .

13. (previously presented) The method of claim 12 wherein upon rejection of said bit string of predetermined length  $L$ , a further  $L$  bit string is selected.

14. (previously presented) The method of claim 9 wherein said step of combining said first and second outputs includes a further step of rejecting excess bits such that said new output is a bit string of length  $L$ .

15. (new) A computer readable medium comprising computer executable instructions for generating a key  $k$  for use in a cryptographic function performed over a group of order  $q$ , said instructions including instructions for:

- generating a seed value  $SV$  from a random number generator;
- performing a hash function  $H()$  on said seed value  $SV$  to provide an output  $H(SV)$ ;
- determining whether said output  $H(SV)$  is less than said order  $q$  prior to reducing mod  $q$ ;
- accepting said output  $H(SV)$  for use as said key  $k$  if the value of said output  $H(SV)$  is less than said order  $q$ ;
- rejecting said output  $H(SV)$  as said key if said value is not less than said order  $q$ ;
- if said output  $H(SV)$  is rejected, repeating said method; and
- if said output  $H(SV)$  is accepted, providing said key  $k$  for use in performing said cryptographic function, wherein said key  $k$  is equal to said output  $H(SV)$ .

16. (new) The computer readable medium of claim 15 wherein another seed value is generated by said random number generator if said output is rejected.

17. (new) The computer readable medium of claim 15 wherein the step of accepting said output as a key includes a further step of storing said key.

18. (new) The computer readable medium of claim 15 wherein said key is used for generation of a public key.

19. (new) The computer readable medium of claim 15 wherein said order  $q$  is a prime number represented by a bit string of predetermined length  $L$ .

20. (new) The computer readable medium of claim 19 wherein said output from said hash

function is a bit string of predetermined length  $L$ .

21. (new) The computer readable medium of claim 15 wherein if said output is rejected, said output is incremented by a deterministic function and a hash function is performed on said incremented output to produce a new output; a determination being made as to whether said new output is acceptable as a key.

22. (new) The computer readable medium of claim 21, wherein said step of incrementing includes a further step of adding a particular value to said seed value.

23. (new) A cryptographic unit configured for generating a key  $k$  for use in a cryptographic function performed over a group of order  $q$ , said cryptographic unit having access to computer readable instructions for:

- generating a seed value  $SV$  from a random number generator;
- performing a hash function  $H()$  on said seed value  $SV$  to provide an output  $H(SV)$ ;
- determining whether said output  $H(SV)$  is less than said order  $q$  prior to reducing mod  $q$ ;
- accepting said output  $H(SV)$  for use as said key  $k$  if the value of said output  $H(SV)$  is less than said order  $q$ ;
- rejecting said output  $H(SV)$  as said key if said value is not less than said order  $q$ ;
- if said output  $H(SV)$  is rejected, repeating said method; and
- if said output  $H(SV)$  is accepted, providing said key  $k$  for use in performing said cryptographic function, wherein said key  $k$  is equal to said output  $H(SV)$ .

24. (new) The cryptographic unit of claim 23 wherein another seed value is generated by said random number generator if said output is rejected.

25. (new) The cryptographic unit of claim 23 wherein the step of accepting said output as a key includes a further step of storing said key.

26. (new) The cryptographic unit of claim 23 wherein said key is used for generation of a public key.

27. (new) The cryptographic unit of claim 23 wherein said order  $q$  is a prime number

represented by a bit string of predetermined length L.

28. (new) The cryptographic unit of claim 27 wherein said output from said hash function is a bit string of predetermined length L.

29. (new) The cryptographic unit of claim 23 wherein if said output is rejected, said output is incremented by a deterministic function and a hash function is performed on said incremented output to produce a new output; a determination being made as to whether said new output is acceptable as a key.

30. (new) The cryptographic unit of claim 29, wherein said step of incrementing includes a further step of adding a particular value to said seed value.